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MATH-2 siRNA (h): sc-42072

BACKGROUND

The *Drosophila* atonal gene produces a protein with basic helix loop helix (bHLH) domains that plays an essential role in the development of the *Drosophila* nervous system. Mammalian atonal homolog 2 (MATH-2) is a helix-loop-helix (HLH) transcription factor that is structurally homologous to the product of *Drosophila* atonal gene. MATH-2 is a 337 amino acid protein with an atonal-related basic HLH domain. In mice, expression of MATH-2 takes place by embryonic day 11.5 and initially localizes to the wall of brain vesicles and in the spinal cord. It is expressed in the cortical plate and the mantle layer in the developing central nervous system, and is limited to the nervous system in adults. Adult mouse cerebrums produce a high level of MATH-2 RNA with lower levels in other neuronal tissues. Research studies suggest that MATH-2 may function as a *trans*-acting factor involved in the development and maintenance of the mammalian nervous system.

REFERENCES

1. Ishibashi, M., et al. 1993. Molecular characterization of HES-2, a mammalian helix-loop-helix factor structurally related to *Drosophila* hairy and Enhancer of split. *Eur. J. Biochem.* 215: 645-652.
2. Shimizu, C., et al. 1995. MATH-2, a mammalian helix-loop-helix factor structurally related to the product of *Drosophila* proneural gene atonal, is specifically expressed in the nervous system. *Eur. J. Biochem.* 229: 239-248.
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4. Kageyama, R., et al. 1996. Regulation of mammalian neural development by helix-loop-helix transcription factors. *Crit. Rev. Neurobiol.* 9: 177-188.
5. Isaka, F., et al. 1997. Genetic mapping of four mouse bHLH genes related to *Drosophila* proneural gene atonal. *Genomics* 37: 400-402.
6. Schwab, M.H., et al. 2000. Neuronal basic helix-loop-helix proteins (NEX and BETA2/Neuro D) regulate terminal granule cell differentiation in the hippocampus. *J. Neurosci.* 20: 3714-3724.

CHROMOSOMAL LOCATION

Genetic locus: NEUROD6 (human) mapping to 7p14.3.

PRODUCT

MATH-2 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MATH-2 shRNA Plasmid (h): sc-42072-SH and MATH-2 shRNA (h) Lentiviral Particles: sc-42072-V as alternate gene silencing products.

For independent verification of MATH-2 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42072A, sc-42072B and sc-42072C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MATH-2 siRNA (h) is recommended for the inhibition of MATH-2 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

MATH-2 (3G7): sc-517009 is recommended as a control antibody for monitoring of MATH-2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MATH-2 gene expression knockdown using RT-PCR Primer: MATH-2 (h)-PR: sc-42072-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.